



What is the Standard Form of a Quadratic Equation?

- A. $y = kx$
- B. $y = mx + b$
- C. $y = ax^2 + bx + c$
- D. $y = a^2x^2 + b^2$

Show Answer...

Correct Answer: C ($y = ax^2 + bx + c$)

Explanation:

The standard form of a quadratic equation is $y = ax^2 + bx + c$, where a , b , and c are constants. This form is also known as the general form of a quadratic equation.

In this form, “ a ” is the coefficient of the x^2 term, “ b ” is the coefficient of the x term, and “ c ” is the constant term. The x^2 term represents the degree 2, or quadratic, term in the equation, while the x term represents the degree 1, or linear, term, and the constant term represents the degree 0, or constant, term.

Quadratic Equation Examples in Standard Form

Here are some examples of quadratic equations written in standard form:

$$y = 2x^2 + 5x + 3$$

$$y = -3x^2 + 6x - 1$$

$$y = x^2 - 8x + 16$$

In each of these examples, the terms are ordered from highest degree to lowest degree (x^2 , x , constant term) and the coefficients are clearly identified.



Uses of Quadratic Equations in Standard Form

Quadratic equations in standard form are used in many areas of mathematics and science, such as:

Calculus: The study of calculus requires a strong understanding of quadratic equations in order to solve optimization problems, find maximum and minimum values, and determine the behavior of functions.

Physics: Quadratic equations are used to describe the motion of objects under the influence of gravity, such as projectiles and falling objects.

Engineering: Quadratic equations are used in engineering to model the behavior of structures, such as bridges and buildings, and to optimize designs for strength and stability.

Conclusion

The standard form of a quadratic equation is $y = ax^2 + bx + c$, where a , b , and c are constants. Understanding this form of quadratic equations is essential for solving problems in mathematics and science, as well as in many practical applications.